**Combatting anthelmintic resistance in ruminants in Europe**

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Cattle, sheep and goats are parasitized by various helminth species, the most important being the gastrointestinal nematodes, lungworms and liver fluke. These pathogens can cause severe disease and affect productivity in all classes of stock and are amongst the most important production-limiting diseases of grazing ruminants in Europe and globally. Essentially, all herds/flocks in a grass-based production system are affected. While in specific cases, mortality can be high, the major economic impact is due to sub-clinical infections causing reduced growth, milk production and fertility. A recent comprehensive study, funded by the EU-GLOWORM project, estimated the economic burden in the EU at an annual cost of €1 B in dairy cattle and € 0.3 B in the dairy cattle and meat sheep sector, respectively.
A major constraint on the control of helminth infections in livestock is treatment failure due to anthelmintic resistance (AR). Frequent, indiscriminate or inappropriate use of anthelmintic drugs to control these parasites has resulted in selection of drug-resistant helminth populations. AR is now widespread in all the major GIN of sheep and in liver fluke and is an emerging problem in cattle parasites. The economic impact of treatment failures today is unknown, but if no alternatives to current control options become available, pasture-based livestock industries are likely to suffer major economic losses and may even become financially unsustainable. In this presentation, I review the current knowledge on the development, occurence and impact of AR in ruminant livestock and how with the COST Action COMBAR (2017-2021) we are coordinating research at the European level to advance knowledge in this area. COMBAR is a growing network, uniting 177 researchers from 31 countries with expertise in diagnostics, vaccine development, targeted selective treatment strategies and decision support with the aim to integrate the various disciplines and propose new control options. Collaboration with economists helps to understand the financial trade-offs of implementing new strategies to fight AR, while the adoption of social sciences helps to understand and overcome the socio-psychological barriers to the uptake and maintenance of sustainable control approaches. The solution to AR will not be a single new magic drug, but is based on a diagnosis before treatment approach as well as a broader panel of control options. This will require more veterinary guidance in helminth control at farm level, but also an increased collaboration and support from regulatory authorities to enhance the market access and uptake of sustainable control approaches and new solutions.